

BEST AVAILABLE COPY

REMARKSIn the Specification

The Specification has been amended as suggested by the Examiner. This will obviate the objection made by the Examiner.

In the Claims

Claims 1 and 16 have been amended to clarify that the "reactor" process variables which are used to regress the scores correlative to a property are "statistically significant" as stated in the Specification at page 13, lines 12-17, and page 4, line 15. This amendment is made for clarification purposes and is not intended to narrow the properly interpreted original claim language. A person skilled in the art would recognize that a mathematical regression would need to be with such a statistically significant reactor variable.

Claim 1 also has been clarified to describe the chemical process as reflecting a chemical reactor which is controlled by one or more process variables. This is explained on page 1, lines 16-30 of the Specification. Again, this amendment is made for clarification purposes and is not intended to narrow the scope of the properly interpreted original language. The amendment also contains a grammatical change, which does not affect the scope of the claim.

Rejections Under 35 USC 102:

Claims 1, 4-6, 13-17, 20-22 and 27 were rejected under 35 USC 102(b) over McDonald et al., U.S. Patent 6,072,576.

Rejections Under 35 USC 103:

Claims 2 and 26 were rejected under 35 USC 103(a) over McDonald et al. in view of Kilius et al., U.S. Patent 5,324,755.

Claims 3, 7, 8, and 23-25 were rejected under 35 USC 103(a) over McDonald et al. in view of Dechene et al., U.S. Patent 5,408,181.

Claims 9 and 10 were rejected under 35 USC 103(a) over McDonald et al. in view of Dechene et al. as applied to claims 1, 5, and 8, and further in view of Kilius et al..

Claims 11 and 12 were rejected under 35 USC 103(a) over McDonald et al. in view of Dechene et al. and Kilius et al. as applied to claims 1, 5, 8, and 9 above, and further in view of Stephens et al., U.S. Published Application 2003/0073787.

Claims 18 and 19 were rejected under 35 USC 103(a) over McDonald et al. in view of Bowden et al., U.S. Patent 3,976,981.

Applicants' Arguments

In the Office Action, the disclosure of McDonald et al. was used either to anticipate some submitted claims or was the primary reference used in combination with secondary references as a basis of an obviousness rejection. Applicants submit that the McDonald et al. disclosure cannot be used for either such purpose.

McDonald et al. describes an on-line control method to produce a product with a specified product property by correlating data obtained from an on-line analyzer (with the analysis on a product or intermediate product made in the process) to the ultimate product property. The process then may be controlled by using the relationship between that calculated value of that property and the desired value of that property. The limitation of the McDonald et al. method is that value of the desired property is determined using a correlation of data obtained only at an on-line analyzer.

In contrast, Applicants obtain "scores" correlative to the desired property from an on-line analyzer, but then regresses those scores with one or more statistically significant reactor process variables to generate the final estimate of the property.

Applicants believe this approach is distinct from McDonald et al. The Office Action points to McDonald et al. at col. 6, line 64, to col. 7, line 36, for a proposition that McDonald et al. teaches regression with regard to at least one

BEST AVAILABLE COPY

process variable. Applicants do not believe this is an accurate interpretation of the McDonald, et al. disclosure.

McDonald et al. at column 6, lines 64-66, state their method requires that "c properties and/or composition data be collected for each of the calibration samples to form a matrix Y of dimension $n \times c$ where $c \geq 1$." This implies that the additional properties are properties of the samples or the environment at the location from which the samples are obtained, i.e., at the location of the on-line analyzer..

Applicants believe that this illustrates that McDonald, et al. teaches the use of a sampling device, as illustrated in Figure 3, that contains additional instrumentation to return one or more additional properties of the sample being tested as a means of improving the correlation between the scores and the property of interest of the sample itself.

Applicants' invention involves the scores/loadings of the sample and reactor process measurements made remote (e.g., upstream) from the sample point. It is certainly possible that the condition of the sample at the point of measurement in McDonald et al. is different from the conditions in the vessels upstream of the sample point. The sample may be cooler, at lower pressure, of a different composition than exist in the reactor. Further, the reaction may have continued in the sample line or other changes may have occurred to the sample or its environment. Applicants believe that process information from the reaction area of the unit, which may or may not be representative of the conditions at the point of withdrawal, provide a better supplement to the orthogonalized spectral data.

Applicants point to page 4, lines 7-11, of their specification in which regression of process variables specifically excludes physical measurements at or near an on-line analyzer. Thus, the quantities of temperature at the on-line analyzer described in McDonald et al. are not process variables as defined in Applicants' Specification and used in Applicants' claimed invention.

Thus, Applicants submit that McDonald et al. cannot anticipate or suggest their claimed invention.

Applicants further submit that none of the cited secondary references in combination with McDonald et al. overcome the deficiency of the disclosure of

BEST AVAILABLE COPY

McDonald et al. with respect to regressing scores correlative to a property obtained at an on-line analyzer to reactor process variables, which are remote from the on-line analyzer. Thus, each of the combinations of cited art made in the Office Action to reject the indicated claims fails to establish a prima facie basis for obviousness under 35 USC 103(a). Further, there is no indicated motivation to combine those cited art documents.

Without prior art that discloses or suggests regression of correlative scores obtained from an on-line analyzer with statistically significant reactor process variables (which are not measured at the location of the on-line analyzer), there is no basis for rejection under either 35 USC 102(b) or 35 USC 103(a). Thus, all claims, as amended, are allowable.

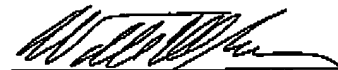
Summary

Applicants submit that all claims now presented are in condition for allowance and request that the Examiner reconsider the rejections made in the last Office Action.

Correspondence Address:

BP America Inc.
Docket Clerk, BP Legal, M.C. 5 East
4101 Winfield Road
Warrenville, IL 60555

Respectfully submitted,



Wallace L. Oliver
Attorney for the Applicants
Registration Number 27,368
(312) 526-1546